

**SYSTEM AND ASSOCIATED FRICTION STIR WELDING (FSW)  
ASSEMBLY, CONTROLLER AND METHOD FOR  
PERFORMING A FRICTION STIR WELDING OPERATION**

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**ABSTRACT OF THE DISCLOSURE**

A system and associated friction stir welding (FSW) assembly, controller and method for performing a friction stir welding operation are provided. The friction stir welding system includes a FSW device, such as a CNC machine, that includes an actuator capable of moving a FSW tool relative to a workpiece. The system also  
10 includes a controller capable of controlling the FSW device to drive the actuator to move the FSW tool. In this regard, the actuator is capable of being driven such that the FSW tool is capable of performing a friction stir welding operation on the workpiece. The controller is capable of monitoring a torque of the actuator to thereby control the FSW device to drive the actuator such that the torque is maintained within  
15 a range about a torque setting.